

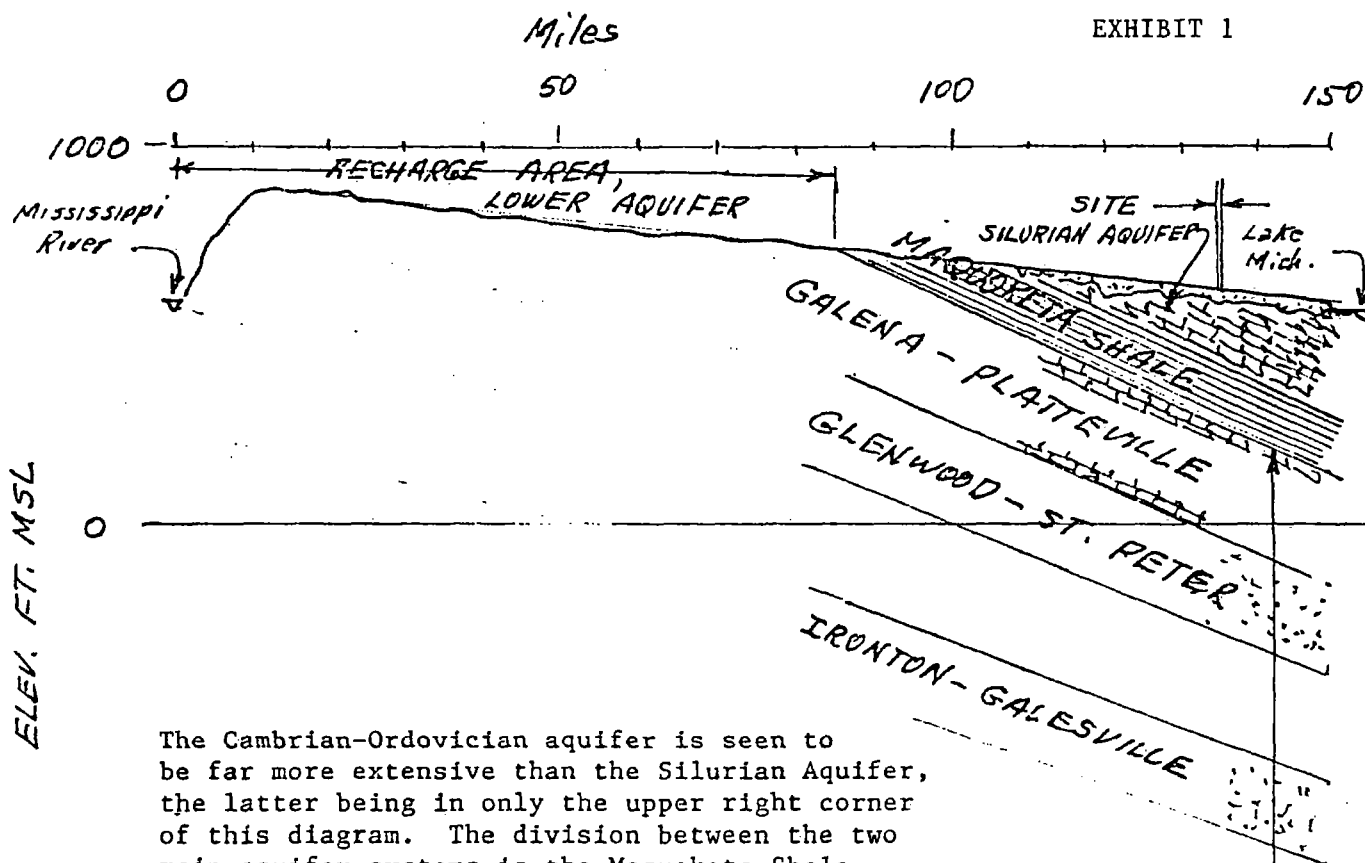


486896

K.7  
1/88

SYSTEM	SERIES	GROUP OR FORMATION	AQUIFER	LOG	THICKNESS (FT)	DESCRIPTION
QUATERNARY	PLEISTOCENE		Sands and Gravels		90-325	Unconsolidated glacial deposits-pebbly clay (till), silt, sand and gravel Alluvial silts and sands along streams
		Fissure Fillings			Shale, sandy, brown to black	
SILURIAN	NIAGARAN	Racine	Silurian		0-180	Dolomite, very pure to argillaceous, silty, cherty; reefs in upper part
		Sugar Run				Dolomite, slightly argillaceous and silty
		Joliet				Dolomite, very pure to shaly and shale, dolomitic; white, light gray, green, pink, maroon
	ALEXANDRIAN	Kankakee	Shallow dolomite aquifer		0-90	Dolomite, pure top 1'-2', thin green shale partings, base glauconitic
		Elwood				Dolomite, slightly argillaceous, abundant layered white chert
		Wilhelmi				Dolomite, gray, argillaceous and becomes dolomitic shale at base
ORDOVICIAN	CINCINNATIAN	Maquoketa			100-240	Shale, red; oolites Shale, silty, dolomitic, greenish gray, weak (Upper unit) Dolomite and limestone, white, light gray, interbedded shale (Middle unit) Shale, dolomitic, brown, gray (Lower unit)
	CHAMPLAINIAN	Galena	Galena-Platteville		270-335	Dolomite, and/or limestone, cherty (Lower part) Dolomite, shale partings, speckled Dolomite and/or limestone, cherty, sandy at base
		Platteville				
		Glenwood				
		St. Peter	Glenwood-St. Peter		165-300	Sandstone, fine and coarse grained; little dolomite; shale at top Sandstone, fine to medium grained; locally cherty red shale at base
CAMBRIAN	CROIXAN	Eminence	Eminence Potosi		0-100	Dolomite, light colored, sandy, thin sandstones
		Potosi				Dolomite, fine-grained, gray to brown, drusy quartz
		Franconia	Franconia		40-80	Dolomite, sandstone and shale, glauconitic, green to red, micaceous
		Ironton	Ironton-Galesville		100-190	Sandstone, fine to coarse grained, well sorted; upper part dolomitic
		Galesville			385-475	Shale and siltstone, dolomitic, glauconitic; sandstone, dolomitic, glauconitic
		Eau Claire			1200-2000	Sandstone, coarse grained, white, red in lower half; lenses of shale and siltstone, red, micaceous
		Elmhurst Member	Elmhurst-Mt. Simon			
		Mt. Simon	Elmhurst-Mt. Simon			
PRE-CAMBRIAN						Granitic rocks

Figure 1. Generalized column of rock stratigraphic units and aquifers in Lake County  
(Prepared by M. L. Sargent, Illinois State Geological Survey)



The Cambrian-Ordovician aquifer is seen to be far more extensive than the Silurian Aquifer, the latter being in only the upper right corner of this diagram. The division between the two main aquifer systems is the Maquoketa Shale.

The recharge area for the upper aquifer, the Silurian, is the ground surface directly above it. Water from precipitation is able to infiltrate down into it.

The recharge area for the lower aquifer, the Cambrian-Ordovician, is located considerable to the west of the Chicago metropolitan area, which on this diagram is located between Lake Michigan and the Site, the latter being designated by note above.

The land surface elevation rises as one proceeds away from Lake Michigan, dropping again at the Mississippi River. This makes it possible for water entering the lower aquifer below the Maquoketa Shale to develop artesian pressures beneath the Chicago metropolitan area, as can be inferred from this diagram. Such artesian pressures did in fact exist about 150 years ago.

IGNEOUS ROCK

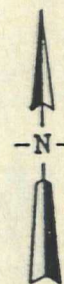
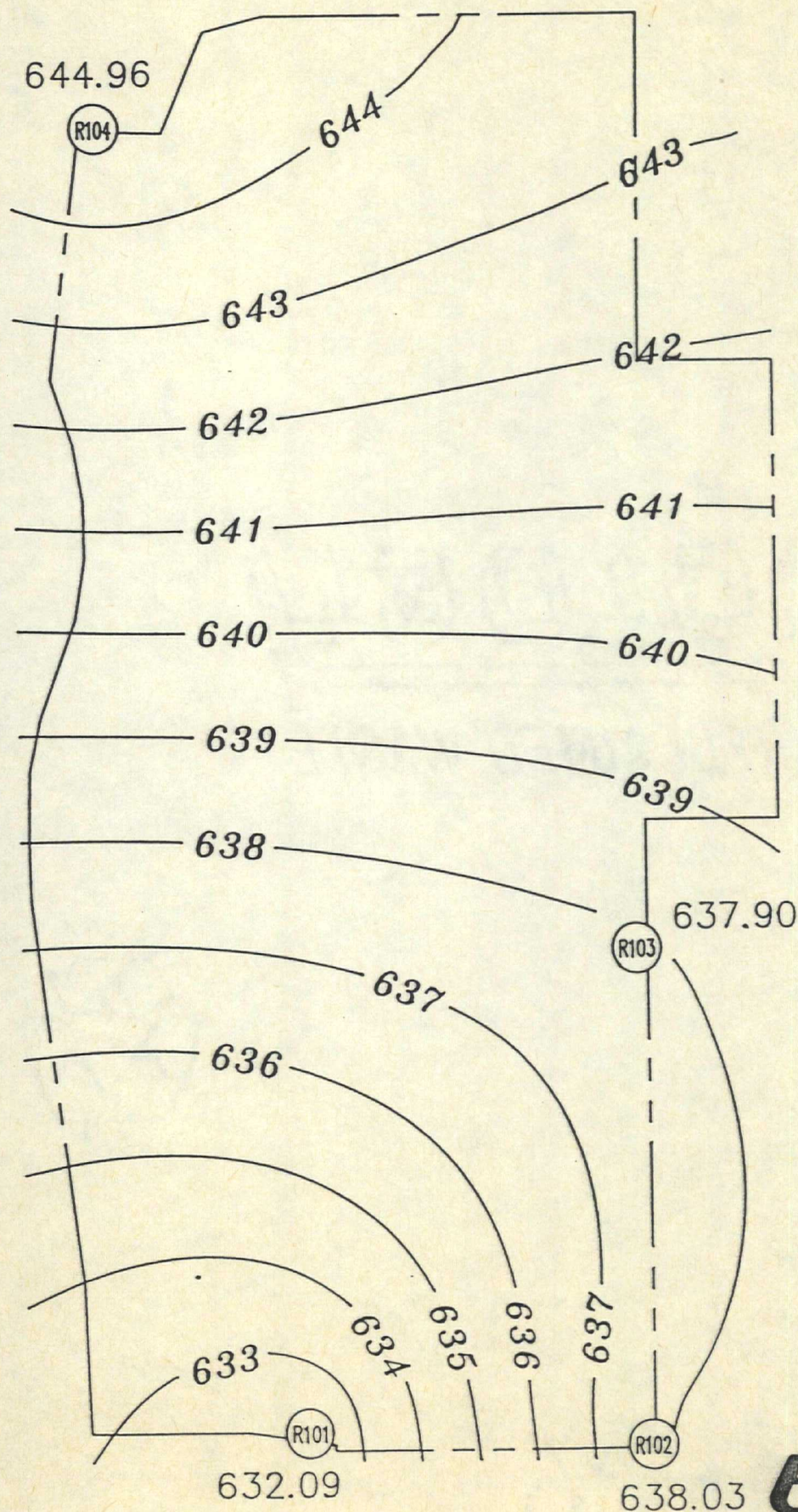
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DATE	W. J. BAUER, INC. LA GRANGE, ILLINOIS 60525 U.S.A.	DESIGNED		APPROVED	
REV.		DRAWN			
DRAWING NUMBER		CHECKED			NO. DATE



EXHIBIT E-3 GROUNDWATER CONTOUR MAP

# 31ST STREET DEEP WELLS (2/11/88)

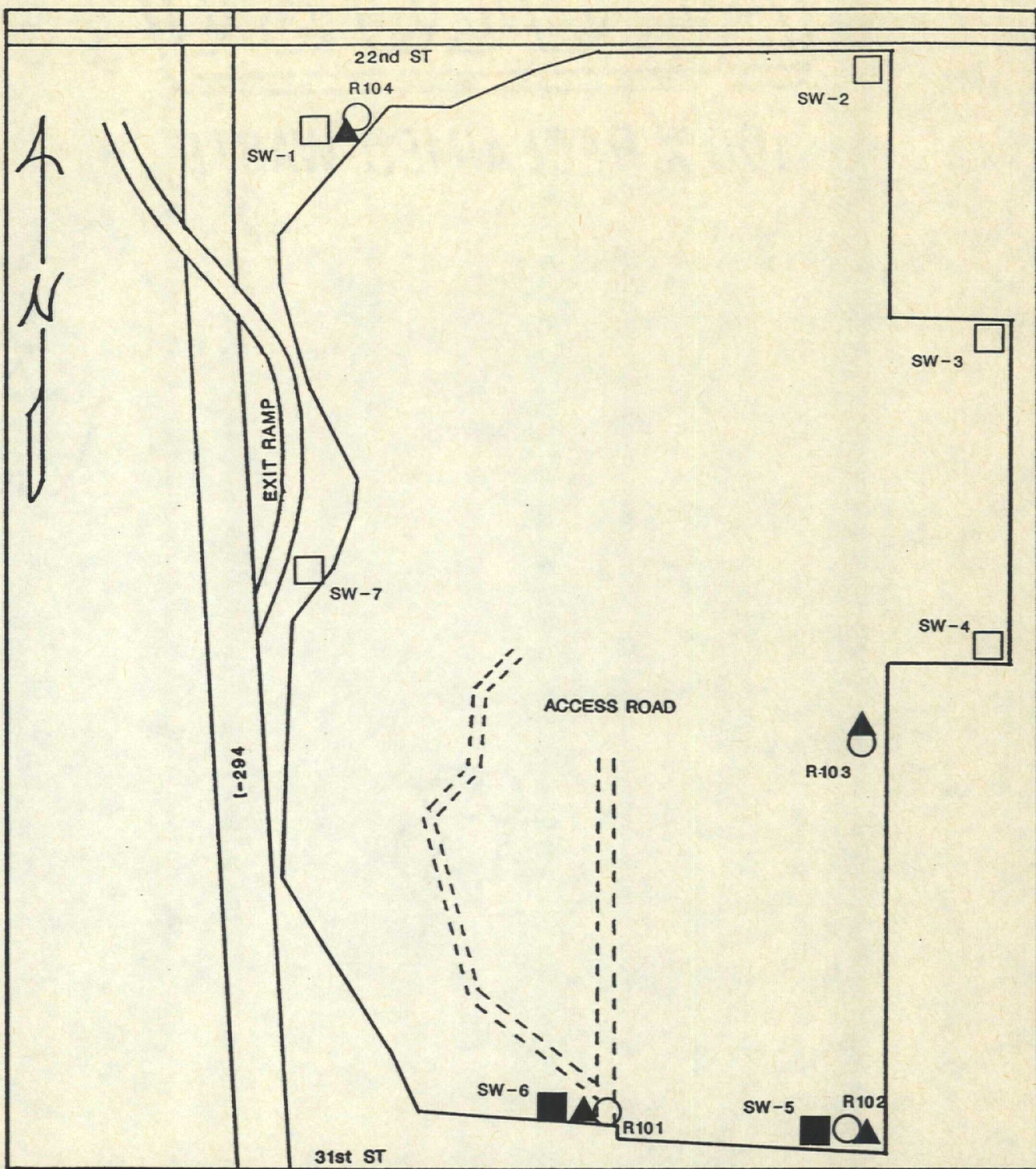


SCALE: 1"=500'



alredge engineering associates, inc.  
1801 north bond street  
naperville, illinois 60540





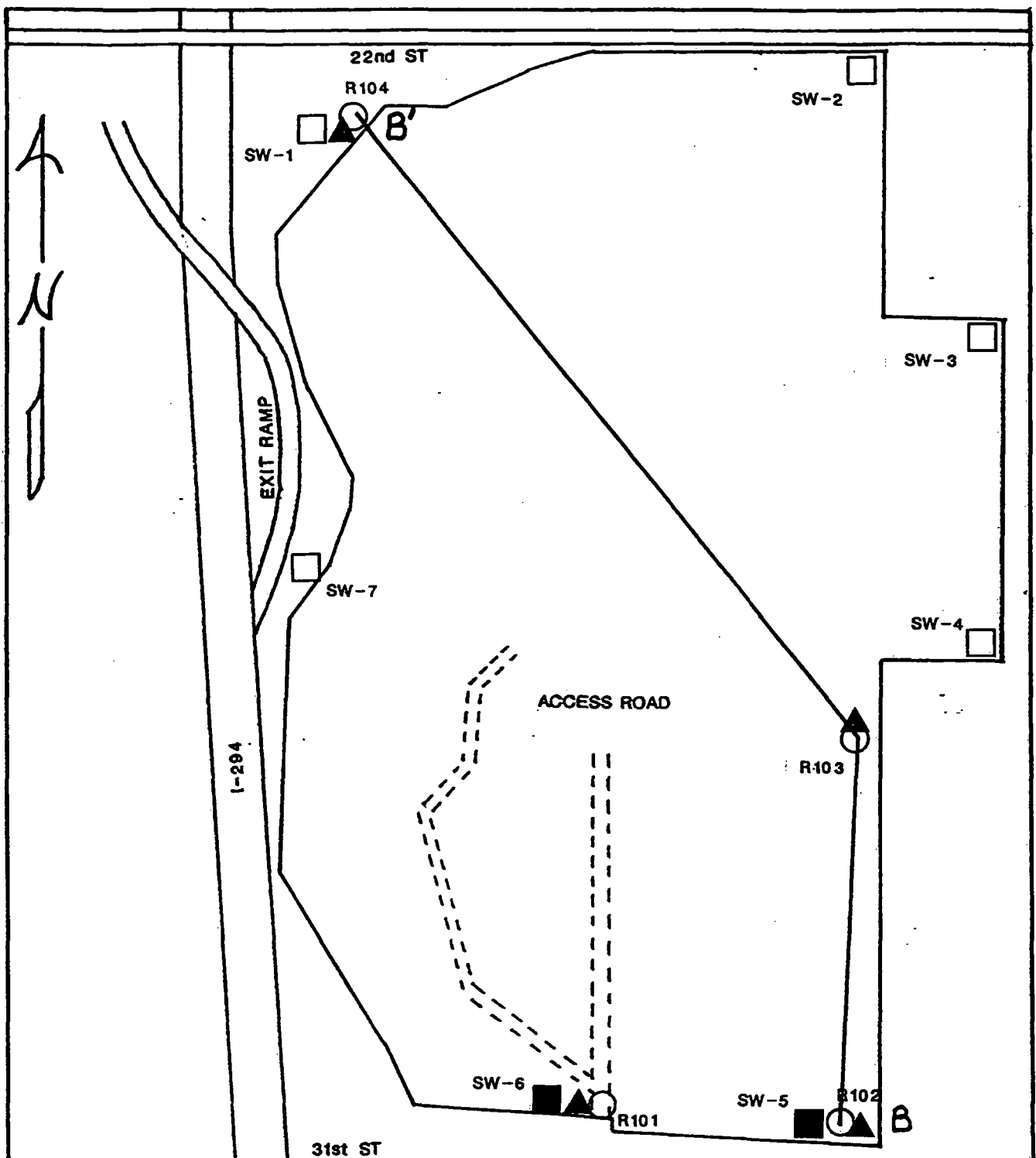
- ☐ PROPOSED WELL  
SAND AND GRAVEL
- ☒ PROPOSED WELL  
BEDROCK
- ☐ EXISTING SHALLOW  
WELL
- ☒ EXISTING DEEP WELL

## ecology and environment, inc.

111 WEST JACKSON BLVD., CHICAGO, ILLINOIS 60604, TEL. 312-663-9415

TITLE		FIGURE #
SITE		SCALE
CITY		P.A.N.
STATE		DATE
SOURCE		REVISED

HINSDALE SEXTON LANDFILL



- ☐ PROPOSED WELL  
SAND AND GRAVEL
- ☒ PROPOSED WELL  
BEDROCK
- ☐ EXISTING SHALLOW  
WELL
- ☒ EXISTING DEEP WELL

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TITLE		FIGURE #
SITE		SCALE
CITY		P.A.N.
SOURCE		DATE
		REVISED

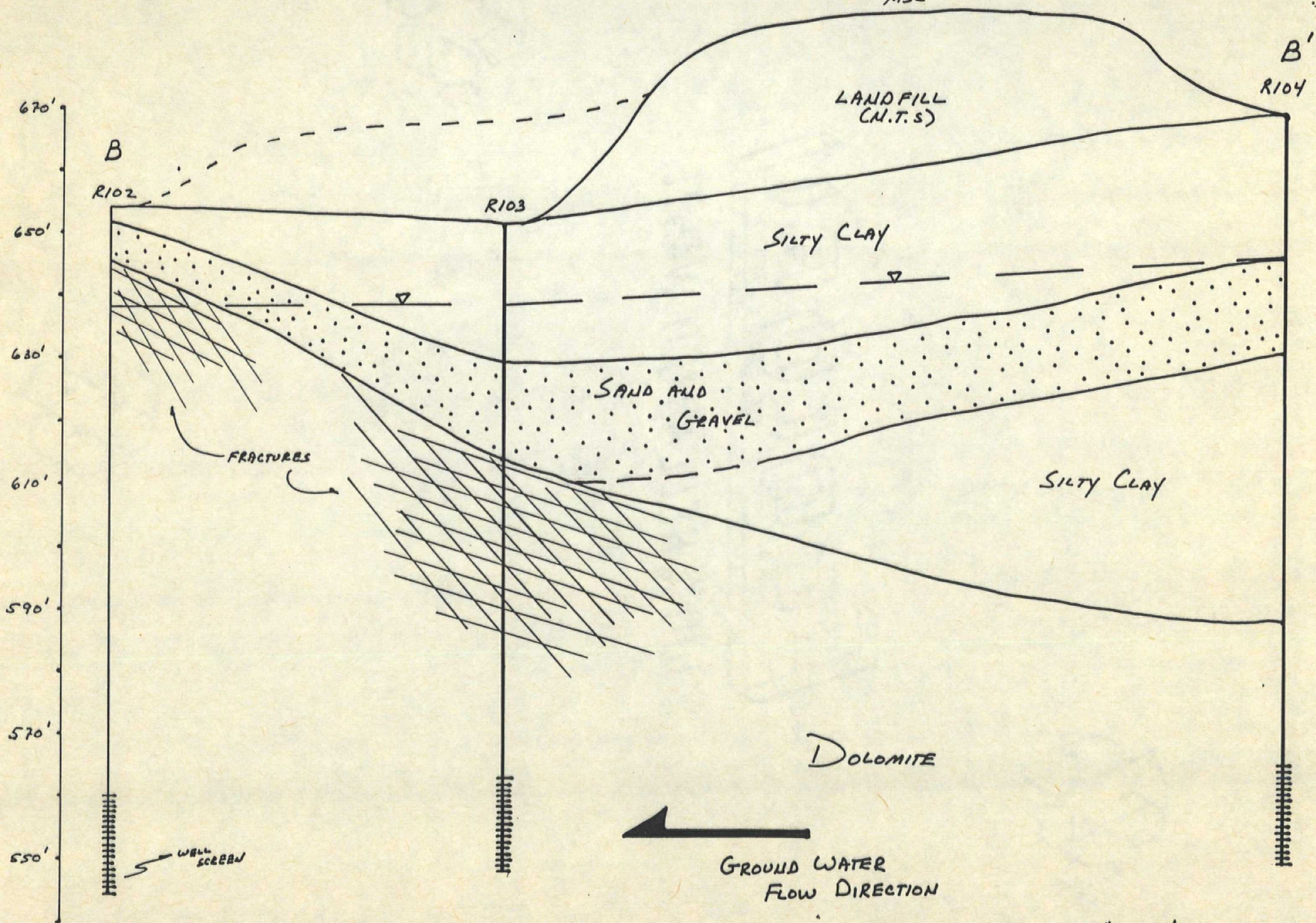
HINSDALE SEXTON LANDFILL



SOUTH

TOP IS 720'  
MSL

NORTHWEST



B'  
R104

R103

B

R102

LANDFILL  
(C.I.T.S.)

SILTY CLAY

SAND AND  
GRAVEL

SILTY CLAY

DOLOMITE

FRACTURES

GROUND WATER  
FLOW DIRECTION

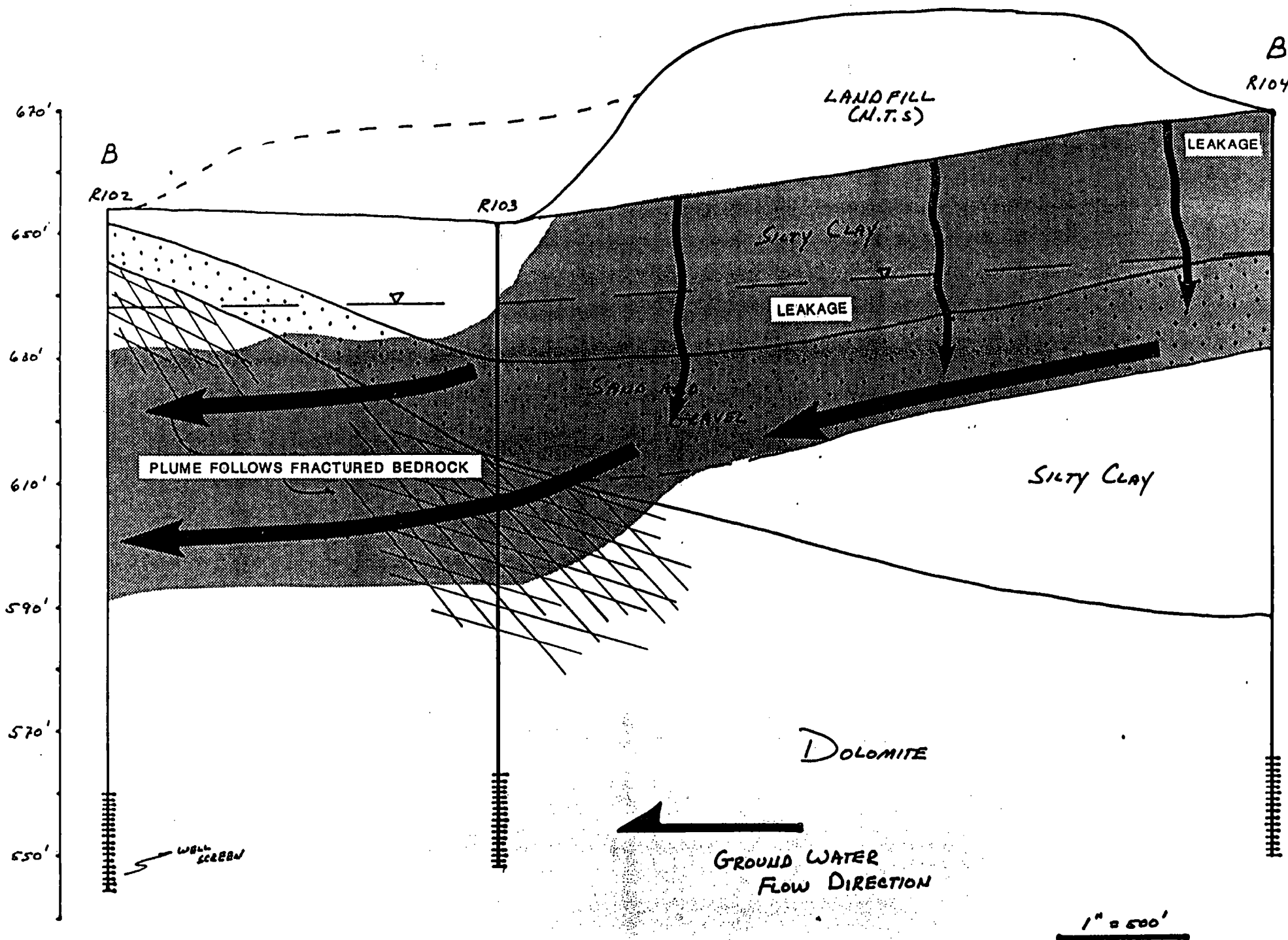
1" = 500'

WELL  
SCREEN



SOUTH

NORTHWEST



## RECORD OF SUBSURFACE EXPLORATION

BORING R-101 PAGE 1 OF 2PROJECT NAME Monitoring Well InstallationDATE STARTED 1/7/88SHA PROJECT NO. 27340DATE COMPLETED 1/12/88SITE LOCATION 31st Street Landfill  
Oak Brook, IllinoisDRILLER SB BORING METHOD See belowGW ENCOUNTERED WHILE DRILLING Refer to  
GROUND WATER, AT COMPLETION water levelSite Coordinates: T6+95W/51+50SGROUND WATER, AFTER summary sheets  
HOLE CAVED, elsewhere

ELEV.	DESCRIPTION	DEPTH	SAMPLE	N	Qu	Qp	Wc	REMARKS
567.4±	Surface							
	Silty CLAY, trace to some Sand and Gravel, brown to grey	10	Rotary drilling at this interval - classification of materials made from wash water cuttings					
		20						
		30						
637.0±	SAND and GRAVEL							
	Grey Dolomite with thin Shale seams ↑ Highly Fractured ↓	40	Rock Bit					
	Numerous Vugs	50	RC 1 Rec=80% Rqd=45%					
	Few Vugs	60	RC 2 Rec=97% Rqd=64%					
		70	RC 3 Rec=100% Rqd=65%					
		80	RC 4 Rec=100% Rqd=85%					
	(Continued)							

## SYMBOLS

N: STANDARD PENETRATION, BLOWS/FT.  
 Qu: UNCONFINED COMPRESSIVE STRENGTH, TONS/SQ. FT.  
 Wc: WATER CONTENT, %  
 LL: LIQUID LIMIT, %  
 PI: PLASTICITY INDEX, %  
 Dd: NATURAL DRY DENSITY, LBS/CU. FT.  
 Qp: HAND PENETROMETER, TONS/SQ. FT.  
 GW: GROUND WATER

## SAMPLE DESIGNATION

SS— DRIVEN SPLIT SPOON 1 3/8" I.D., 2" O.D.  
 ST— PRESSED SHELBY TUBE  
 AU— AUGER SAMPLE  
 RC— ROCK CORE - NXM  
 BORING METHOD  
 HSA— HOLLOW STEM AUGERS  
 CFA— CONTINUOUS-FLIGHT AUGERS  
 C— CASING  
 MD— MUD DRILLING

NOTE: The stratification lines represent the approximate boundary between soil types and the transition may be gradual.



## RECORD OF SUBSURFACE EXPLORATION

BORING R-101 PAGE 2 OF 2PROJECT NAME Monitoring Well InstallationDATE STARTED 1/7/88DATE COMPLETED 1/12/88SHA PROJECT NO. 27340DRILLER SB BORING METHOD See belowSITE LOCATION 31st Street Landfill  
Oak Brook, IllinoisGW ENCOUNTERED WHILE DRILLING Refer toGROUND WATER, AT COMPLETION water levelGROUND WATER, AFTER Summary SheetsHOLE CAVED, elsewhereSite Coordinates: 16+95W/51+50S

ELEV.	DESCRIPTION	DEPTH	SAMPLE	N	Qu	Qp	Wc	REMARKS
	80.0'							
	Some Vugs	90	RC 5 Rec=100% Rqd=80%					
	Some Vugs	100	RC 6 Rec=100% Rqd=82%					
	Few Vugs	110	RC 7 Rec=100% Rqd=100%					
	Few Inclusions	120	RC 8 Rec=100% Rqd=100%					
	End of Boring @ 119.5'							
	Installed 2" PVC Well							
	Bottom of well elev.= 551.19							
	See Monitoring well detail.							
	Boring Method:							
	6" O.D. CFA to 10'							
	Set 10' of 6" casing							
	3 7/8" rock bit with re-							
	circulated drilling mud to							
	30'. Set 30' of 4" casing.							
	2 15/16" rock bit with re-							
	circulated drilling mud to							
	42'. Set 42' of 3" casing.							
	NX core to 119.5' w/clear water							
	Boring flushed with clear							
	water prior to setting well.							

## SYMBOLS

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 Q<sub>u</sub>- UNCONFINED COMPRESSIVE STRENGTH, TONS/SQ. FT.  
 Wc- WATER CONTENT, %  
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 PI- PLASTICITY INDEX, %  
 D<sub>d</sub>- NATURAL DRY DENSITY, LBS./CU. FT.  
 Q<sub>p</sub>- HAND PENETROMETER, TONS/SQ. FT.  
 GW- GROUND WATER

## SAMPLE DESIGNATION

SS- DRIVEN SPLIT SPOON 1 3/8" I.D., 2" C.D.  
 ST- PRESSED STEEL TUBE  
 AU- AUGER SAMPLE  
 RC- ROCK CORE - NXM  
 BORING METHOD  
 HSA- HOLLOW STEM AUGERS  
 CFA- CONTINUOUS FLIGHT AUGERS  
 C- CASING  
 MD- MUD DRILLING

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## RECORD OF SUBSURFACE EXPLORATION

BORING R-102 PAGE 1 OF 2

PROJECT NAME Monitoring Well Installation

SHA PROJECT NO. 27340

SITE LOCATION 31st Street Landfill  
Oak Brook, Illinois

Site Coordinates: 5+20W/51+90S

DATE STARTED 2/5/88

DATE COMPLETED 2/10/88

DRILLER N.E. BORING METHOD See Below

GW ENCOUNTERED WHILE DRILLING Refer to  
water level

GROUND WATER, AT COMPLETION summary sheets

GROUND WATER, AFTER elsewhere

HOLE CAVED, \_\_\_\_\_

ELEV.	DESCRIPTION	DEPTH	SAMPLE	N	Qu	Qp	Wc	REMARKS
554.6±	Surface							
	Silty CLAY, black, TOPSOIL							
	Silty CLAY, tr. to so.							
	Sand and Gravel, brown	10	Rock Bit					
	SAND and GRAVEL		RC 1					
			Rec=86%					
			Rqd=0%					
	Grey Dolomite	20	RC 2					
	Few Vugs		Rec=95%					
			Rqd=18%					
		30	RC 3					
			Rec=95%					
			Rqd=39%					
	Few Inclusions	40	RC 4					
	Some Vugs		Rec=100%					
			Rqd=17%					
		50	RC 5					
	Few Vugs		Rec=100%					
			Rqd=50%					
		60	RC 6					
	Some Vugs		Rec=95%					
			Rqd=4%					
		70	RC 7					
	Few Vugs		Rec=100%					
			Rqd=43%					
	Continued	80						

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Wc: WATER CONTENT, %

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PI: PLASTICITY INDEX, %

Dd: NATURAL DRY DENSITY, LBS./CU. FT.

Qp: HAND PENETROMETER, TONS/SQ. FT.

GW: GROUND WATER

## SAMPLE DESIGNATION

SS— DRIVEN SPLIT SPOON 1 3/8" I.D., 2" O.D.

ST— PRESSED SHELBY TUBE

AU— AUGER SAMPLE

RC— ROCK CORE - NXM

BORING METHOD

HSA— HOLLOW STEM AUGERS

CFA— CONTINUOUS FLIGHT AUGERS

C— CASING

MD— MUD DRILLING

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## RECORD OF SUBSURFACE EXPLORATION

BORING R-102 PAGE 2 OF 2PROJECT NAME Monitoring Well InstallationSHA PROJECT NO. 27340SITE LOCATION 31st Street Landfill  
Oak Brook, IllinoisSite Coordinates: 5+20W/51+90SDATE STARTED 2/5/88DATE COMPLETED 2/10/88DRILLER N.E. BORING METHOD See BelowGW ENCOUNTERED WHILE DRILLING Refer toGROUND WATER, AT COMPLETION water levelGROUND WATER, AFTER summary sheetsHOLE CAVED, elsewhere

ELEV.	DESCRIPTION	DEPTH	SAMPLE	N	Qu	Qp	Wc	REMARKS
	80.0'							
	Grey Dolomite		RC 8 Rec=100% Rqd=60%					
	Few Vugs		RC 9 Rec=100% Rqd=53%					
	No Vugs		RC 10 Rec=100% Rqd=87%					
	End of Boring @ 109.0'							
	Installed 2" PVC well							
	Bottom of well elev.= 545.63							
	See Monitoring Well Detail							
	Boring Method:							
	6" O.D. CFA to 12.5'							
	Ream hole to 12.5' with							
	5 7/8" rock bit							
	Set 12.5' of 6" casing							
	NX core to 19.5'							
	Drill rig broke down							
	Ream hole to 19.5' with							
	3 7/8" rock bit							
	Set 19.5' of 4" casing							
	NX core to 109.0'							
	Boring flushed with clear							
	water prior to setting well.							

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## SAMPLE DESIGNATION

SS— DRIVEN SPLIT SPOON 1 3/8" I.D., 2" O.D.  
 ST— PRESSED SHELBY TUBE  
 AU— AUGER SAMPLE  
 RC— ROCK CORE - NXM  
 BORING METHOD  
 HSA— HOLLOW STEM AUGERS  
 CFA— CONTINUOUS FLIGHT AUGERS  
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## RECORD OF SUBSURFACE EXPLORATION

BORING R-103 PAGE 1 OF 2PROJECT NAME Monitoring Well InstallationDATE STARTED 1/8/88SHA PROJECT NO. 27340DATE COMPLETED 1/14/88SITE LOCATION 31st Street LandfillDRILLER SB BORING METHOD See BelowOak Brook, IllinoisGW ENCOUNTERED WHILE DRILLING Refer toGROUND WATER, AT COMPLETION water levelGROUND WATER, AFTER summary sheetsHOLE CAVED, elsewhereSite Coordinates: 5+05W/34+30S

ELEV.	DESCRIPTION	DEPTH	SAMPLE	N	Qu	Qp	Wc	REMARKS
651.8±	Surface							
	Silty CLAY, trace to some Sand and Gravel, brown to grey	10	Rotary drilling this interval - Classification of materials made from wash water cuttings					
		20						
	SAND and GRAVEL	30						
614±	Grey Dolomite with thin Shale seams	40	Rock Bit					
	Highly Fractured	50						
		60						
	Some inclusions	70	RC 1					
			Rec=83%					
			Rqd=8%					
	(Continued)	80						

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 Qp: HAND PENETROMETER, TONS/SQ. FT.  
 GW: GROUND WATER

## SAMPLE DESIGNATION

SS— DRIVEN SPLIT SPOON 1 3/8" I.D., 2" O.D.  
 SI— PRESSED SHELBY TUBE  
 AU— AUGER SAMPLE  
 RC— ROCK CORE - NXM  
 BORING METHOD  
 HSA— HOLLOW STEM AUGERS  
 CFA— CONTINUOUS FLIGHT AUGERS  
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## RECORD OF SUBSURFACE EXPLORATION

BORING R-103 PAGE 2 OF 2PROJECT NAME Monitoring Well InstallationDATE STARTED 1/8/88DATE COMPLETED 1/14/88SHA PROJECT NO. 27340DRILLER SB BORING METHOD See belowSITE LOCATION 31st Street LandfillGW ENCOUNTERED WHILE DRILLING Refer toOak Brook, IllinoisGROUND WATER, AT COMPLETION water levelGROUND WATER, AFTER summary sheetsSite Coordinates: 5+05W/34+30SHOLE CAVED, elsewhere

ELEV.	DESCRIPTION	DEPTH	SAMPLE	N	Qu	Qp	Wc	REMARKS
	80.0'		RC 2					
			Rec=100%					
			Rqd=71%					
	Few inclusions	90	RC 3					
			Rec=100%					
	Few Vugs		Rqd=92%					
		100	RC 4					
			Rec=100%					
			Rqd=82%					
	End of Boring @ 103.5'							
	Installed 2" PVC well	110						
	Bottom of well elev.= 548.50							
	See Monitoring Well Detail.							
	Boring Method:	120						
	6" O.D. CFA to 10'.							
	Set 10' of 6" casing.							
	3 7/8" rock bit with re-							
	circulated drilling mud to							
	70.5.							
	Set 70.5' of 4" casing.							
	NX core to 103.5'.							
	Boring flushed with clear							
	water prior to well instal-							
	lation.							

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## SAMPLE DESIGNATION

SS— DRIVEN SPLIT SPOON: 3/8" I.D., 2" O.D.  
 ST— PRESSED SHEET PILE  
 AU— AUGER SAMPLE  
 RC— ROCK CORE - NXM  
 BORING METHOD  
 HSA— HOLLOW STEM AUGERS  
 CFA— CONTINUOUS FLIGHT AUGERS  
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## RECORD OF SUBSURFACE EXPLORATION

BORING R-104 PAGE 1 OF 2PROJECT NAME Monitoring Well InstallationDATE STARTED 1/14/88SHA PROJECT NO. 27340DATE COMPLETED 1/16/88SITE LOCATION 31st Street LandfillDRILLER WH BORING METHOD See BelowOak Brook, IllinoisGW ENCOUNTERED WHILE DRILLING Refer toGROUND WATER, AT COMPLETION water levelGROUND WATER, AFTER summary sheetsSite Coordinates: 24+70W/4+00SHOLE CAVED, elsewhere

ELEV.	DESCRIPTION	DEPTH	SAMPLE	N	Qu	Qp	Wc	REMARKS
667.9±	Surface							
	Silty CLAY, trace to some Sand and Gravel, brown to grey	10	Rotary drilling this interval - Classification of materials made from wash water cuttings					
		20						
	SAND and GRAVEL	30						
		40						
	Silty CLAY, trace to some Sand and Gravel, brown to grey	50						
		60						
		70						
588±		80						

(Continued)

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 Qp: HAND PENETROMETER, TONS/SQ. FT.  
 GW: GROUND WATER

## SAMPLE DESIGNATION

SS— DRIVEN SPLIT SPOON 1 3/8" I.D., 2" O.D.  
 ST— PRESSED SHELBY TUBE  
 AU— AUGER SAMPLE  
 RC— ROCK CORE - NXM  
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BORING R-104 PAGE 2 OF 2PROJECT NAME Monitoring Well InstallationDATE STARTED 1/14/88DATE COMPLETED 1/16/88SHA PROJECT NO. 27340DRILLER WH BORING METHOD See belowSITE LOCATION 31st Street Landfill  
Oak Brook, IllinoisGW ENCOUNTERED WHILE DRILLING Refer to  
GROUND WATER, AT COMPLETION water levelSite Coordinates: 24+70W/4+00SGROUND WATER, AFTER summary sheets  
HOLE CAVED, elsewhere

ELEV.	DESCRIPTION	DEPTH	SAMPLE	N	Qu	Qp	Wc	REMARKS
588.0±	80.0'							
	Grey Dolomite with thin Shale seams and few Vugs		Rock Bit					
			RC 1					
			Rec=100%					
			Rqd=39%					
		90						
			RC 2					
			Rec=100%					
			Rqd=93%					
		100						
			RC 3					
			Rec=100%					
			Rqd=92%					
		110						
			RC 4					
			Rec=100%					
			Rqd=83%					
	End of Boring @ 118.5'	120						
	Installed 2" PVC well Bottom of well elev.= 549.36 See Monitoring Well Detail							
	Boring Method: 6" O.D. CFA to 10'. Set 10' of 6" casing. 3 7/8" rock bit with re- circulated drilling mud to 82.5'. Set 82.5' of 4" casing. NX core to 118.5'							

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## SAMPLE DESIGNATION

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 RC— ROCK CORE - NXM  
 BORING METHOD  
 HSA— HOLLOW STEM AUGERS  
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